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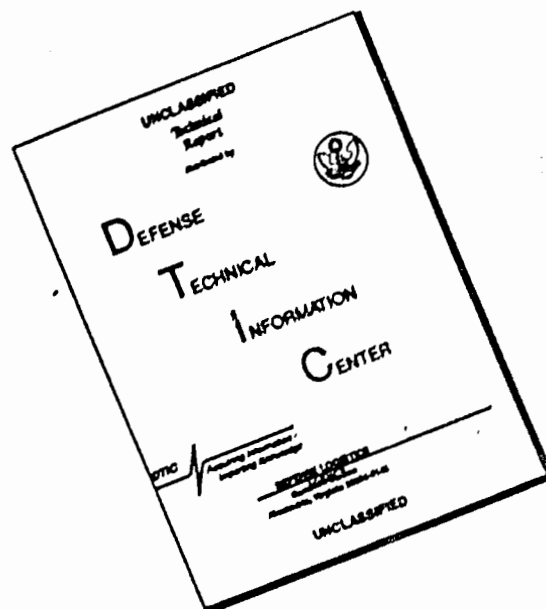
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**OFFICE OF THE ADJUTANT GENERAL**  
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IN REPLY REFER TO

AGAM-P (M) (14 Mar 67) FOR OT

17 March 1967

**SUBJECT: Operational Report - Lessons Learned, HQ, 19th Engineer Battalion (Combat) (Army)**

**TO: SEE DISTRIBUTION**

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2. Information contained in this report is provided to the Commandants of the Service Schools to insure appropriate benefits in the future from lessons learned during current operations, and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

*Kenneth G. Wickham*

KENNETH G. WICKHAM  
Major General, USA  
The Adjutant General

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HEADQUARTERS  
19TH ENGINEER BATTALION (COMBAT) (ARMY)  
APO SAN FRANCISCO 96238

EGC-19E-CO

8 November 1966

SUBJECT: Operational Report - Lessons Learned (RCS CSFOR 65) for  
Quarterly Period Ending 31 October 1966

THRU: Commanding Officer  
937th Engineer Group (Combat)  
APO 96238

Commanding General  
18th Engineer Brigade  
APO 96037

Commanding General  
United States Army, Vietnam  
ATTN: AVC-DH  
APO 96307

Commander In Chief  
United States Army, Pacific  
ATTN: GOP-MH

TO: Assistant Chief of Staff for Force Development  
Department of the Army (ACSFOR DA)  
Washington, D. C. 20310

## Section 1, Significant Organization or Unit Activities

### 1. Narrative Summary of Activities

a. During the reporting period this unit has continued the major construction effort in the Qui Nhon area, provided engineer support for the 7th USAF units involved in Operation Tiger Hound, and provided combat engineer support to the 1st Cavalry Division (Airmobile) in Operations Thayer, Irving, and Duke. The major commitment to combat operations after 1 September caused a significant interruption in the scheduling of some construction projects and has resulted in extensions of the time frames expected for completion.

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b. The assets of this unit were increased with the attachment of the 554th Engineer Company (Float Bridge) (TO&E 5-78F) which arrived in country on 30 September 1966. Over 50% of this unit's equipment is still in transit; however, to date it has supplemented this unit's capability both with manpower and with additional haul capability for both construction and combat support operations. The 2d and 3d Platoons of the 553d Engineer Company (Float Bridge) were released on 31 October and returned to the 45th Engineer Group (Construction) at Cam Ranh Bay.

c. During the quarter, elements of the battalion spent 83 days in rear area construction, 50 days in combat support operations, and 7 days training.

### 2. Significant Functional Activities.

#### a. Personnel and Administration (Including Morale and Welfare)

In the past quarter the battalion has received an average monthly input of 25 replacements. This input has been primarily in the combat engineer field. Some shortages still exist within the support MOS's such as cooks, clerks, and supply personnel. The battalion will experience another large rotation in the month of December when approximately 80 EM will depart for CONUS.

#### Battalion Strength and Attached Units

<u>Unit</u>	<u>Auth</u>	<u>Asgd</u>	<u>Per Cent</u>	<u>In Transit</u>	<u>In Country Strength</u>
19th Engr Bn	619	595	96.1	7	588
509th Engr Co	127	110	86.6	1	109
554th Engr Co	216	214	99.1	0	214

All battalion regulations have been reviewed and updated for correctness within scope of theater administration and operations. This task was undertaken because many of the existing regulations were applicable to operations in CONUS and had not been corrected. Similar steps were taken to update the standard operating procedures in all areas of operations.

The EM Club and NCO club constructed by this unit began full operation during the period, with the administration and supply for these facilities being furnished by Qui Nhon Mess Association. Attendance has indicated that the construction was worthwhile and an aid to morale. However, the lack of adequate power generating capability has hampered club operation.

The Battalion's Post Exchange facility has made periodic trips to field locations for the purpose of supplying items to units of the battalion supporting combat operations.

In August, the battalion was assigned a new Chaplain. A regular schedule of services has been maintained for the Catholic and Protestant faith. The Catholic men are transported to the 27th Transportation Battalion for services while the Protestant men are furnished services in the battalion area. Religious services for men of the Jewish faith are held once monthly at the 85th Medical

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## Evacuation Hospital in Qui Nhon.

The Chaplain's time has been allotted in the following priorities: men in the hospital, units in the field, counseling and administration, and community relations. This procedure has enabled him to visit men in the hospital three times a week and each unit in the field once a week.

A permanent battalion chapel is being built. At the present time services are conducted in the EM Club. Care has been taken to maintain the religious atmosphere for the services.

An intense effort has been made to provide units in the field with regular Sunday services. When the battalion Chaplain was unable to schedule services, coordination was made with Chaplains of other units operating in the area to provide services.

During the reporting period, the medical section was relocated in a wood frame building as a permanent Battalion Aid Station. Facilities for running water, cabinets for medical records, bookshelves and desks were constructed. A doctor was assigned to the battalion during this reporting period.

The immunization status of all personnel was kept up to date and a suspense card system established to facilitate immunization procedures. A separate medical file for all food handlers (both US and Local National) has been established to provide efficient administration of semi-annual physical examinations, laboratory tests, and chest X-rays for these individuals. A file of contact reports on VD cases also is being maintained, and command health information lectures have been given by Medical Corps officers to all companies.

During that portion of the reporting period that a Medical Corps officer was assigned to the battalion, the sick call rate averaged 850 visits per month. All cases requiring procedures, consultation, or medical care beyond the capabilities of this medical facility have been promptly referred to an appropriate medical facility in the Qui Nhon area. Battalion combat support field missions have been provided with medical support and during one two week period, complete field Battalion Aid Station facilities were provided, during which time both military and Vietnamese civilian battle casualties were treated. When possible, medical section personnel have visited a nearby Vietnamese Refugee Center every week to assist in the medical care of these people.

### b. Intelligence and Security.

Considerable attention was focused on correcting and updating intelligence files and documents. Pertinent regulations affecting the control and or disposition of classified documents were scanned and new procedures, including check systems, established for the future handling and processing of classified items.

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Considerable work has been done in maintaining and constructing physical security facilities in this unit's area. A finalized version of an emergency operating plan has been published and disseminated to the Units in Valley A. In addition, readiness test exercises have been monitored, and a general upgrading of response realized.

A policy has been established governing SAEDA orientations and personal security briefings. The policy provides for both the initial troop orientation briefing as well as subsequent, pro-R&R, and renewal type briefings specified in the pertinent USARV regulation governing SAEDA. Interior guard and unit compliance with the provisions of this regulation has also been re-emphasized during this period.

The reconnaissance element of this unit has been utilized for date gathering in support of battalion operations, to include engineer work estimates and routing information. Most of the reconnaissance commitment has been along Route #1 in the area vicinity of Bong Son.

A large number of tactical 1:50,000 maps have been expended to the companies for use on combat support operations and substantial amounts of report forms and film have been utilized during this period.

### c. Operations and Training

The 112,000 barrel tank farm storage facility in Qui Nhon was completed on 15 September 1966 after an expenditure of 163,564 US man hours and 143,459 local national man hours. To initiate the next phase in construction of the Central Highlands POL complex, this unit was tasked on 24 August 1966 to construct a 6" pipeline from Qui Nhon to An Khe and a 65,000 barrel tank farm storage facility at An Khe. To facilitate this construction the 1st Platoon, 697th Engineer Company (Pipeline Construction) was flown from Thailand with TO&E equipment on a TDY basis and attached to this unit on 8 August 1966. By 14 October, 34.6 of the required 52.1 miles of pipeline had been laid and coupled, and two (2) of the five (5) required pump stations had been completed. Since that date, the project has been delayed because requisitions for coupling clamps were not filled prior to 31 October 1966.

Work on the COSTAR Maintenance Facility was concentrated on erection of the stool framework for the prefabricated buildings. Once the steel framework was in place vertical erection of the buildings could continue despite the onset of the monsoon rains. The project was delayed for a period of 23 days because of commitments to combat operations.

The Qui Nhon Main PX complex was completed on 3 September 1966 after an expenditure of 16,292 US man hours and 19,901 local national man hours. The project consisted of construction of a complex to include retail sales stores, concession areas, closed storage, and a snack bar with covered patio dining area. The project required the pouring of 438 cubic yards of concrete and 19,200 square feet of quonset construction of which 13,340 square feet was elevated by construction of 40" concrete block base walls.

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When materials and construction effort could be made available, work was continued on the 25 rotary wing heliport complex scheduled for use of two incoming helicopter companies to be attached to the 14th Aviation Battalion. The project was delayed for over 60 days because of the inability to acquire 3/4 (-) and 1/2 (-) gravel to be used in the single penetration treatment of pad and taxiway surfaces. The rock was acquired in October and work has continued. Some delay has been encountered because of heavy rains, which began in October and because of an inability to obtain repair parts for the steel-wheel roll.

Continuous maintenance effort continued to be committed on Route 19-440 from Qui Nhon to the foot of An Khe pass and Route 1 from Qui Nhon to the permanent ammunition storage facility. Both roads have been experiencing considerable damage because of heavy rains and poor drainage. Since Route 19 is essentially an asphalt road, special problems were created because the nearest supply of cold patch mix is at An Khe (a haul distance of about 40 miles for work in the Qui Nhon area). With a major portion of the battalion committed to combat support operations it has been impractical to perform such a haul, so an expedient method of filling pot holes has been employed. The holes are squared and filled with 3" (-) rock and compacted using 5 ton trucks until the rock is about 3/4 of an inch above the road level. The rock is saturated with MC-O and the patch covered with sand. Some degree of effectiveness for temporary repair has been achieved. Route 1 to the Permanent Ammunition Storage area is a compacted earth road with a low elevation in many places and immediately adjacent to civilian buildings. It has been difficult to achieve proper drainage under these conditions. Work has been concentrated on rectifying the situation by ditching, placing culverting where possible, and attempting to stabilize the road surface with rock. Both roads have remained trafficable despite damage. Resupply in the area has not been materially hampered.

Emphasis has been placed continually upon equipment installation and engineer construction in preparing a rock crusher site location. Many of the necessary equipment parts have been received and it is hoped that the site will be producing effectively prior to 1 January 1967.

This unit has been tasked to supply base development planning assistance and cantonment self-help engineer assistance to three additional battalion-sized units, bringing the total commitment to six. Planning activities including surveying, construction planning, and site layout have continued at the normal pace with no delays. However the provision of technical construction assistance and engineer equipment support have been hindered by higher priority commitments.

During this reporting period this unit was tasked to provide engineer support to two detachments of 7th USAF on Operation Tiger Hound. On 14 September 1966 one platoon of C Company was airlifted to Kham Duc Special Forces Camp near the Laotian border with the following equipment; two (2)

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5 ton dump trucks, one (1) 210 trailer mounted air compressor, one (1) 16s concrete mixer, and one (1) 2½ yard front loader.

The platoon was required to construct five (5) protective revetments for O1E aircraft, shower and latrine facilities, a building extension for living quarters, and a reinforced concrete communications bunker. Over 100 tons of construction materials had to be requisitioned in Qui Nhon drawn and packaged for air lift to the camp. Difficulty was encountered in airlifting the front loader which did not exceed total weight or dimensions but which exceeded point load capacity for a C-130 aircraft. The loader was finally airlifted with the load being distributed in the aircraft by placing the bucket down and lifting the front wheels into the air. This project is now 60% complete despite delays in aircraft shipment of materials and heavy rains in the area.

This unit was also tasked to requisition, draw and package for airlift over 210 tons of materials for similar construction for the Air Force detachment at Khe Sanh Special Forces Camp near the North Vietnamese border. Materials have been received by Naval Construction Units who are performing the work on site.

For the period 12 September to 31 October 1966, this Battalion provided extensive support to the 1st Cavalry Division (Airmobile) in combat operations in the Qui Nhon and Bong Son areas.

14 September - 19 September (A Company, 509th Engineer Company)

This operation required an amphibious landing north of Bong Son, construction of 250' DD bailey bridge, construction of 70' DS bailey bridge, and clearing of 12 kilometers of road, during which 11 mines and 8 booby traps were destroyed in place. The purpose of the operation was to pass an Engineer Construction Company, including heavy earth moving equipment, from the beach landing site (BS924102) to English Airfield (BS878012) so that construction work could be initiated so that the airfield would be improved to handle C-130 traffic. Area security was provided by elements of one (1) ARVN battalion with support of U.S. Naval gunfire. Units were harassed with sporadic sniper fire and the unit area was probed twice during hours of darkness. A Company sustained one WIA during the operation. The mission was successfully completed on 18 September 1966 and units returned by land to the Qui Nhon area.

13 September - 17 October (B Company)

This operation required continuous upgrading and maintenance of Route 1 for Class 31 traffic from the RJ 1 and 19 (BR986331) to Hammond Airfield (BR883536), construction of two access roads to Hammond Airfield, construction of an access road to 1st Cav Div Arty headquarters, and construction of a forward 16 pad heliport facility at Phu Cat ARVN Training Center (BR913459). During this period over 18,005 cubic yards of fill were hauled, 5,000 square feet penoprime, and 450' of culvert placed. The responsibility for work in this area was transferred to the 6th ARVN Engineer Group on 17 October 1966.

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12 September - 22 September (2d Platoon, C Company)

During this period this unit has the responsibility of clearing and spot-repairing of Route 1 from Hammond Airfield to Cong Son, for the purpose of passing convoys on an as required basis. The task required emplacement of four (4) PSP fords of 160', 20', and 10', emplacement of 304' of culvert, hauling 800 cubic yards of fill, and construction of one (1) 20' expedient bridge using railroad rails and PSP. Security was provided for work parties and convoy movement by elements of the 1/9th Cav. Viet Cong activity was heavy in this area of operations and in several instances convoys and work parties received fire. No casualties were sustained by C Company.

4 October - 20 October (A Company with one (1) platoon 554th Engineer Company attached)

This unit was required to dock the Bong Son Railroad bridge to handle vehicular traffic. The bridge is 1350 feet long and required approximately 250 tons of engineer materials for stringers, docking, and treadway. It was also necessary to construct access and egress roads from Route 1 to the bridge. Now completed, this bridge handles Class 35 military traffic. Area security was provided by elements of the local ARVN units. Enemy activity in the area consisted of light sniper fire and the destruction of the old highway bridge (Class 12). No casualties were sustained during the operation.

6 October - 18 October (509th Engineer Company with Five (5) platoons of 554th Engineer Company attached)

This unit was tasked to pass the Engineer Construction Company (Reference activities 14-19 September) back from English Airfield to the beach landing site, remove the 250° DD bailey bridge and the 70° DS bailey bridge, and build a 250° suspension foot bridge and a 60° Class 12 steel stringer bridge as replacements for baileys. These tasks were accomplished in an area of intense activity by ARVN units. The 509th Engineer Company sustained 18 WIA and one vehicle destroyed during the operation.

17 October - 31 October (B Company (-) with 3d Platoon of C Company attached)

This unit was responsible for the upgrading and maintenance of Route 1 from Hammond Airfield to Bong Son. Security has been provided by elements of the 1/9 Cav. Viet Cong activity was heavy during the period, requiring daily clearing of the road for mines and destroying them in place. The Viet Cong have also employed demolitions in bypasses and culverts on a continuing basis so that much of the effort must be repeated to keep the road passable. To date the unit has not suffered any casualties, but has lost four vehicles to mines.

26 October - 28 October (A Company with 509th Engineer Company in support)

These elements were tasked with emplacing bailey bridges of 70° 90° and 80° on Route 1 in the area of operations.

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In maintaining land LOC's in support of combat operations, two significant problems have been encountered; continuing destruction of road facilities by the Viet Cong and the onset of heavy rains. In unsecured portions of the road, work must be repeated on a daily basis just to maintain trafficability, and time that could be used for upgrading the road is lost. Considerable difficulty has been encountered in periods of heavy rains. Bypasses have proved impractical because they must be built up to the level of the road to prevent water overflow. In some places this required more effort than is practicable. Also, sufficient culverting cannot be installed to handle the water flow. As a result, each time the area experiences heavy rains, 24 to 48 hours of effort is required to establish trafficability.

In the area of training, USARV Regulation 350-1, titled USARV Training, dated 28 July 1966 was implemented upon receipt. Guidelines were established for all company sized units for training scheduling and presentation so that each individual will receive the required training in all subject areas.

### d. Logistics.

During the reporting period, emphasis was placed on correcting and updating this unit's supply administration. Property was transferred to a new property book officer per joint inventory on 29 August 1966. New hand receipts were issued in September and adjustments are currently being made to insure accountability for all property. Publications have been inventoried and requisitions submitted to correct deficiencies. The filing system was revised and corrected to comply with current regulations.

General and project supply requirements continued to be administered with the added responsibility of logistics support to elements in combat support operations. In logistics support for combat operations two problem areas were encountered; normal resupply to units not accessible by land LOC and release of engineer construction materials from depot.

TCMD's were submitted in required time frames for aerial resupply missions. Aircraft were either not allocated on an as-required basis, were cancelled, or were allocated only when the situation became an emergency. Normal resupply rates could not be established for rations, ammunition, and POL under these circumstances.

Upon receipt of immediate requirements for engineer construction materials it required four (4) to eight (8) hours to secure a release from depot. This system has often forced delays in delivery to units in the field and subsequently delayed operations.

On fifty per-cent of requisitions submitted by this battalion for Class II and Class IV, excluding engineer construction materials, no status has been received. Subsequent follow-up attempts to obtain the status of these requisitions in most cases have proved fruitless. A letter was forwarded to Depot at Qui Nhon Support Command on 10 September requesting the status of all outstanding requisitions. As of 31 Oct 1966, no reply to this letter has been received.



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Major effort has continued to be expended in supply of potable water to fourteen (14) units including the 1st Logistical Command ROKA. Output of three operational water points has averaged about 90,000 gallons per day.

### e. Communications

On 24 October replacement of old series FM radios with the AN/PRC-25's and AN/VRC 46's and 47's began. Receipt of these radios solved a significant problem. During the operations in support of the 1st Cavalry Division, communications with supported and supporting units was difficult because of limited frequency and range of the old radio series. This lack of communications created time delays because adequate contact and coordination could not be made with supported units.

New series radios were issued on a one-for-one exchange basis under the "D" series TO&E. This allocation does not permit FM capability for the Commanding Officer, Executive Officer, S-2 and S-3, all of which must be reliable communications with all companies and the battalion NCS. On AN/VRC 46 was levied from each company to provide this necessary communications.

### Section 2, Part I, Observations (Lessons Learned)

#### 1. Personnel

##### (Finance Records)

ITEM: Finance Records of Incoming Personnel.

DISCUSSION: Individuals continue to arrive in this battalion without funds. It is known that USARV has advised DA of the need for individuals to arrive in this command with a minimum of \$75.00, and DA has passed this information to CONUS and overseas commands, but individuals are still not being advised of the delay in making payments in this command. Individuals are not being counseled on the necessity of making allotments and other arrangements for the welfare of their families prior to departure to this command.

OBSERVATION: Personnel should be oriented in the areas of finance and personnel affairs prior to their departure from their previous station for this command.

#### 2. Operations

##### (Quonset Construction)

ITEM: Concrete Pads for Quonset Huts



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**DISCUSSION:** Knowing the standard size of quonsets to be 20' x 48' concrete slabs were constructed to these dimensions. During construction, it was found that, although the length dimension was indeed the exterior dimension, the width is in reality an interior dimension, and the slabs were 8½" too narrow.

**OBSERVATION:** The true exterior dimension of a quonset is 20' 8½" by 48'. While unimportant when utilizing the kit flooring, a concrete flooring must be poured to these dimensions.

### (Water Distributor)

**ITEM:** Expedient Water Distributor

**DISCUSSION:** A gravity-fed water distributor was fabricated by mounting a navy cube on a 2½ ton pole trailer. A spraybar was then fabricated and welded to the bottom rear of the navy cube. The resulting distributor has a capacity of approximately 1000 gallons.

**OBSERVATION:** This simply-fabricated distributor has provided a rugged and dependable means for water distribution for construction purposes, and requires no alteration of the carrier trailer.

### (Eiffel Bridge Removal)

**ITEM:** Removal of an Eiffel Bridge Without the Aid of a Crane or Intermediate Supports.

**DISCUSSION:** In removing a 70 foot Eiffel Bridge, the following procedure was used. The bridge was jacked up to clear the roadway and set on construction rollers. Two bays of decking were removed from the far end and placed on the nearshore side of the rollers to assist in counter-balancing the bridge. The blade of a HD-16 dozer was chained to the near end of the bridge and the bridge pulled to a point where the farshore end was two feet from the abutment. A wrecker was then used to raise the farshore end from the abutment. The dozer and wrecker then moved the bridge beyond the balance point with the dozer pulling and providing a counterweight and the wrecker supporting the far end of the bridge out of the gap. After passing the balance point, the wrecker was disengaged and the dozer pulled the bridge the remaining distance. Calculations of stresses involved required that the wrecker operate with outriggers in place, wheels blocked, short boom braced to the truck frame, and a 4 to 1 advantage on the cable system. A 5 ton dump truck loaded with fill was attached to the front of the wrecker as a safety measure against sliding.

**OBSERVATION:** This method of removing an Eiffel bridge is fast, does not require the use of an intermediate support in order to roll the bridge back, or a crane to lift it out. Our experience showed that the operation could be made faster yet if the wrecker is used to lift the nearshore end for placement of the rollers instead of using jacks.

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### **(Panel Bridge Construction)**

#### **ITEM: Panel Bridge Construction on a Limited Site**

**DISCUSSION:** A 70 foot double-single panel bridge was constructed on a site limited in width to about 16 feet with banks sloping at a 45 degree angle. The required lateral distance between outside edges of base plates for such a bridge is 20' 11". A system of three transoms dug in and laid on edge and supported at one end by a panel on edge was used to provide bearing. The centerline of the bridge was shifted from the site centerline to take advantage of better soil bearing capacity on one side.

**OBSERVATION:** On a limited site, very careful checks must be made in advance to insure sufficient bearing capacity for the bridge well in advance of actual construction. Assembly of a bridge on a limited site was facilitated by placing the outside panel first instead of the usual procedure of placing the inside panels first.

### **(Data Applicable to Pipeline Construction)**

#### **ITEM: Welding, Cutting, and Ripple Bending Material Usage Data Gathered from the Qui Nhon - An Khe Pipeline Project.**

**DISCUSSION:** The following experience data is submitted for informational purposes to other units, and is applicable to construction of welded 6" POL pipelines. Ripple bending is an expedient means of heat bending pipe when probent sections are not available.

a. Welding required four 3.2mm rods for the initial weld, followed by four 4mm rods to complete the weld for each welded section. With 264 weight, 174 pounds per mile combined weight of rods.

b. Two bottles of oxygen and one bottle of acetylene will make 60 pipe cuts or bovels. One mile of cut pipe with 264 joints will require approximately 9 bottles of oxygen and 5 bottled of acetylene.

c. Four 90 degree bonds, fabricated with ripples at 5" intervals, requires approximately one bottle of oxygen and one bottle of acetylene in order to heat the pipe for bending.

**OBSERVATION:** Experience data assists in planning for adequate resupply of construction materials.

### **(Overseas Shipment of Equipment)**

#### **ITEM: Shipment of TO&E Equipment from CONUS.**

**DISCUSSION:** When the 554th Engineer Company (Float Bridge) departed CONUS, all equipment was scheduled to be transported on one vessel. After departure

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from CONUS, the equipment was arbitrarily split between two ships. The shop truck, repair parts van, crawler-mounted tractor, wrecker, and cranes were all placed together on one ship, while 65% of the vehicles and bridging came on a second ship. The vessel carrying this unit's support capability was delayed by engine trouble, and the unit was caught in the position of having a large number of vehicles with virtually no support capability.

OBSERVATION: If it is not possible to have all unit equipment transported on a single ship, the unit should be notified, and should be allowed to make arrangements with port officials to split support-type equipment equally between ship. In this way it would be possible to provide maintenance and repair parts support even if a ship were delayed enroute.

(Position Probing by Viet Cong)

ITEM: The use of Local Villagers and Reconnaissance Teams to Locate US Positions.

DISCUSSION: While this unit was deployed in defensive positions on a beach area north of Bong Son, it became common practice for the local villagers to sell fruits and beverages in and around the first perimeter. One of the younger men was observed drawing the location and emplacement of vehicles, CP's and crew-served weapons. Upon detention and interrogation, he was found to be a VC sympathizer. A second perimeter defense was established farther out, and intercepted a four man reconnaissance team that night. One of the VC killed was carrying a complete schematic of the CP, the defense perimeters, and the crew-served weapons positions. Prior to a major attack of the position, the local villagers and fishing boats were discovered to have left the area.

OBSERVATION: Keep local inhabitants away from the perimeter, and observe their movements around the local area. Establish listening and observation posts far enough out to intercept probing and reconnaissance patrols. Never use crew-served weapons on light sniper fire, as the VC use this tactic to pinpoint weapon location. Reposition the CP and crew-served weapons nightly, and use the CP only for the conduct of operations, never as sleeping quarters.

(MEDIVAC)

ITEM: Training of Personnel to Direct Helicopter Medivac.

DISCUSSION: When it initially became necessary for this unit to call in and direct the landing of helicopter medivac, it was found that there were no personnel who had knowledge of directing helicopter landings.

OBSERVATION: Each unit should have at least three people made familiar with directing helicopter landings. These people should be able to adjust for wind speed and to direct the helicopter accordingly.

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## (Vehicle Parking on Work Site)

ITEM: Parking of Vehicles at Construction Sites Within Insecure Areas.

DISCUSSION: Parking of vehicles at construction sites in the same location daily allows the enemy to place command-detonated explosives in these locations during the times the unit is absent from the work site.

OBSERVATION: Vehicle parking locations, as well as security personnel positions, should be varied daily. Construction areas should be cleared for explosive devices and mines daily.

## (Air Force Anti-Personnel Mines)

ITEM: The Difficulty of Destroying Air Force AP Mines that the Viet Cong have Gathered and Employed as Booby Traps

DISCUSSION: The Air Force AP mine is usually easily identifiable due to its bright yellow color. Normally these mines have been dropped from a plane and have not exploded and are often found to be defective. They are normally found emplaced bottom up, with the detonation point face up at ground level. Demolition by rifle fire or C-4 explosive applied to the side of the mine have produced poor results.

OBSERVATION: To destroy these mines with explosives, the explosives must be placed directly on top of the detonation point. Rifle fire is completely ineffective.

## (SandBag Culvert Headwalls)

ITEM: The Prevention of the Theft of Sand Bags when Used for Culvert Headwalls or Other Construction Site Uses.

DISCUSSION: It was found that, although sand bags were the fastest method of installing headwalls for culverts emplaced in combat support, these sand bags would disappear overnight, since the local populace has also found many uses for sand bags. By pouring penepime or other asphaltic substances over the headwalls, the usefulness of the sand bags, as far as civilians are concerned, is destroyed, and the sand bags remain in place.

OBSERVATION: It is desirable to render engineer materials unfit for anything but their intended use in order to protect them from theft.

## (Wooden Culvert Headwalls)

ITEM: Employment of Wooden Culvert Headwalls.

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DISCUSSION: In some hostile areas, it has been found to be impossible to retain sand bag headwalls, as they can be easily dismantled by the enemy. Wooden headwalls are not easily dismantled, causing the Viet Cong to have to expend his limited amounts of explosives to destroy them. Further, lumber headwalls, secured by steel cable and deadmen, have a great deal more permanence.

OBSERVATION: Lumber headwalls, which take only slightly longer to construct than sandbag headwalls, have considerably more permanence in areas of relatively minor VC harassment.

### (Demolitions)

ITEM: Varied Uses of Demolitions.

DISCUSSION: Demolitions can be employed in many situations to facilitate expedient engineer work. Demolitions can be used to excavate for culverts, cut timber for expedient crossings, clear debris from enemy-employed obstacles, cut steel bridge stringers to size, etc. In Many cases, the proper use of demolitions can eliminate the need for heavy or sophisticated equipment.

OBSERVATION: Engineer troops should be made aware of the many uses for demolitions both in destruction and construction.

## 3. Training and Organization

### (Medical Augmentation)

ITEM: Needed Augmentation of Medical Personnel for Coverage of Attached Companies during Combat Support Operations

DISCUSSION: In sustained combat support operations, in which the entire battalion is employed in widely separated locations, there are insufficient medical personnel and ambulances to service the battalion alone; with two additional companies attached, as is the case in this battalion, the situation is critical.

OBSERVATION: There should be medical augmentation of both personnel and equipment available on call from local field hospital units to support attached units and/or sustained combat or combat support operations.

### (Emergency Lighting)

ITEM: The need for more adequate emergency lighting means for field aid stations.

DISCUSSION: A battalion aid station should have both a 1.5 KW generator and a 24 volt battery operated emergency lighting set added to the TO&E.

OBSERVATION: The current 12 volt battery provides inadequate light for the care of emergency cases at night when the main electric power generator is not operating.

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## 4. Logistics

### (Mattress Covers and Sheets)

ITEM: As mentioned in the last quarterly ORLL from this unit, shortages of Mattress covers and sheets exists.

DISCUSSION: Steel cots and mattresses have been issued to this unit; however, sheets and mattress covers are still due in:

- a. 6080-001 Mattress Covers, 7210-281-6751 619 each.
- b. 6267-007 Sheet, Bed 7210-171-1099 2476 each.

OBSERVATION: Issuing mattresses and steel cots without covers and sheets causes the mattresses to become prematurely worn and soiled, hence lessening their useful life.

### (Due Outs)

ITEM: Non-receipt of Status of Due Outs.

DISCUSSION: Status on only 47% of this unit's due outs are received from depot. Without status from the depot, it is not possible to ascertain the voucher number depot assigns to the requests. Upon receipt of an item with only depot's number, the Battalion Document Register must be screened to find a request with the same FSN and quantity as the item received. Even when a request with the identical FSN and quantity has been found it is not certain that this is the correct request, for the item may have been requested with that FSN and quantity on an alternate date.

OBSERVATION: Lack of due out status leaves the Battalion Document Register incomplete and often incorrect. This makes it impossible to take further action on the requests in question.

## 5. Other

### (Distribution of Blank Forms)

ITEM: Need for Automatic Distribution of Blank Forms.

DISCUSSION: This unit has experienced difficulty in receiving blank forms. It takes 30 to 45 days to receive forms ordered on a special requisition, and over 60 days for a normal requisition to be processed. In many instances, requisitions remain unfilled. As an example, a total of 3400 DA Forms 2139 have been requisitioned since June 1966. As of the end of this quarter, none have been received.

OBSERVATION: A system of automatic distribution of blank forms, with distribution based on records of average past usage, would save repetitive requisitioning within supply channels, and would insure the availability

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of forms when needed.

## (Water Disinfection)

ITEM: The Need for Increased Emphasis to be Placed on Individual and Group Water Disinfection Procedures in the Field.

DISCUSSION: Personnel arriving in this theatre have required training to realize that no water procured in the field may be consumed without adequate disinfectant precautions, however clear and safe the water may look or taste and regardless of the fact that it is consumed by individuals normally residing in a given area. The development of even a single case of water-borne types of disease is capable of causing disease of epidemic proportions under field conditions which, in addition to impairment of the health of the personnel, can delay or prevent the accomplishment of the mission.

Experience has shown that water disinfectants such as calcium hypochlorite or halozene pills do not cause abdominal discomfort or digestive tract disturbances, a commonly held misconception that causes personnel to be reluctant to use these pills.

The concept that a calcium hypochlorite ampul is adequate to disinfect 30-35 gallons of any type water is erroneous. It is adequate only if the water appears clear, which would indicate a lack of large quantities of organic matter. However, even water which has been treated with these ampuls must always be checked with the appropriate testing kit for adequate chlorine residual (5 ppm or more) before being dispensed for drinking.

OBSERVATION: Ignorance of basic concepts causes individual and group errors in water disinfection discipline. That problem is best controlled by providing regular and frequent information on the reasons for disinfection, and by insuring that all individuals who might be involved in group water supply know and follow correct procedures to uniformly guarantee the potability of the drinking water.

## Section 2, Part II, Recommendations:

Operations - As mentioned in the last quarterly ORLL from this unit, it is felt imperative that the "E" series TO&E for front leaders be implemented as soon as possible for Engineer units of this type. Work in this area requires extensive fill operations. The three front leaders presently TO&E are totally inadequate to cope with the extensive requirement for loading operations.

### DISTRIBUTION:

3-937th Engr Gp  
1- USARPAC (Air Mail)  
3-USARV-DH  
1-Bn File  
15-18th Engr Bde, S-3

NOLAN C. RHODES  
LTC, CE  
Commanding

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EOC-3 (8 Nov 66)

1st Ind

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-85) for Quarterly  
Period Ending 31 October 1966

HEADQUARTERS, 937TH ENGINEER GROUP (COMBAT), APO 96318, 20 November 1966

THRU: Commanding General, 18th Engineer Brigade, APO 96307

Commanding General, United States Army, Vietnam, ATTN: AVC-DH, APO 96307

Commander In Chief, United States Army, Pacific, ATTN: SPOC-MH, APO 96558

TO: Assistant Chief of Staff for Force Development, Department of the Army  
(ACSFOR DA), Washington, D.C. 20310

1. Concur in the recommendation of the Battalion Commander.
2. This headquarters has requested earliest implementation of the "E" series TOE for attached combat engineer battalions.
3. In conjunction with CG, USASC, QN, procedures for release of materials from depot stock to meet combat support requirements have been simplified to preclude delays mentioned in Section I, paragraph 1e (Logistics).
4. (Section II, Part I, 1): I agree that it is highly desirable for each individual to be advised of the desirability of initiating allotments and the lead time required for the allotment to become effective in order to prove family hardships while the individual is in a transient status, however I agree that there is a significant delay in payment once the individual arrives at his unit of assignment. The average time for processing of a partial pay is one day and, for travel pay due, three days.

*E. P. Braucher*

E. P. BRAUCHER  
Colonel, CE  
Commanding

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WHEN SEPARATED FROM  
BASIC INCLOSURE

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